

W I M X  
THE  
M. I. T.  
Radio Society

RAGCHEW

NOVEMBER

1935

Vol. 4

No. 10

Officers

WILLIAM FINGERLE, JR., President

ALDEN E. ACKER, Vice-President

RUSSELL C. COILE, Secretary

Advisors

Prof. EDWARD L. BOWLES

DR. JOHN L. BARNES



## The M.I.T. Radio Society

### RAGCHEW

The M.I.T. Radio Society wishes to welcome all the radio amateurs in the freshman class, and invites all of you to join the Society and participate in its activities. While we realize that your studies here may make you work harder than you ever have before, we hope you will be sensible enough to realize that you can't work all of the time. You will find it wise to budget your time in such a manner that you get a sufficient amount of exercise, sleep and social activities besides keeping up in your work. When you do this remember the value of keeping your hobbies going. On many application blanks which perhaps you will fill out after you graduate, or even before, e. g. application blanks for the Electrical Engineering co-operative VI-A course, you will be asked to list all outside activities you carried on at school. For this reason it is advisable to join your professional society. But this is a minor reason compared to others. A professional society should help you keep up with the latest developments; it should afford an opportunity to meet prominent leaders of business and research; it should have frequent field trips thru modern manufacturing plants and research laboratories, and above all such provide enjoyable companionship of fellows who are interested in the same things as you are.

The M.I.T. Radio Society offers all of the advantages mentioned and in addition valuable features that few other societies have. Opportunity to do creative work in many varied fields is offered to members of the M.I.T. Radio Society. Let us make a brief classification:

#### TECHNICAL

DESIGN -- of transmitters, receivers, monitors, frequency meters, remote-control equipment, antennas.

Construction -- of this equipment.

MAINTENANCE -- keeping a path shoveled thru the snow, etc.

OPERATION -- of the 80, 40, and 20 CW transmitters and the 20, 10, and 5 phones.

#### ADMINISTRATIVE

EXECUTIVE -- work on the committees; Executive, Station, Program, and special ones such as the Code Class.

JOURNALISTIC -- work on the RAGCHEW writing news articles or feature or technical articles, typing or drawing.

*The Society is just what you make it.  
See Acker about working over at the  
Shack, and Coile about the Ragchew*



## LAST YEARS ACTIVITIES

For the benefit of the freshman the RAGCHEW will give a brief account of the activities of the Society last year. The new Field house was just built in the summer preceding last fall. During its construction the power and heat to our Shack were cut off and water got inside somehow to a depth of almost a foot. At the opening of school, things were pretty much in a mess. The 40 meter CW transmitter was simply too haywire to even start to fix up so it was torn down immediately. The 80 meter 500 watt CW transmitter had some rusty parts, and other little things cropped up which all culminated in keeping it off the air for a couple of months. The activities of the club were quite hampered during the first semester by the absence of almost half of the Executive committee who for one reason or another hadn't been able to come back to school. But the RAGCHEW was revived in November and a couple of good meetings with speakers such as McMurdo Silver. It wasn't until the second semester that the society really began to do things though.

At the election early in February, William Fingerle, '36, Alden Acker, '37, and Russ Coile, '38 were elected president, station manager, secretary-treasurer, respectively. The new officers went to work over in the Shack right away. At least 6 different transmitters were built at the Shack during the second semester. The boys tried to get a good 20 meter CW transmitter in shape for the International DX contest in March but they built about four transmitters in the two weeks preceding the contest--none of which worked reliable enough for a club transmitter. After operators had signed up for schedules so that the station would have been on the air almost all day long, the last transmitter just wouldn't behave so we didn't even work a station.

A week or so after the contest, Acker rebuilt the transmitter once more taking his time, and that one worked satisfactorily all the rest of the semester. Acker then brought over a modulator ending up with a couple of carbon-plate 210's in Class B. Our 211 modulated amplifier was consequently given about 150 watts input, and our 20 meter fone worked all over the country. The absence of a decent receiver hampered things quite a bit, although one of the members let the Society use an SW 3 of his for several months. That is one of our most serious problems now--how we can get a decent receiver.

Quite a bit of other experimenting with transmitters was done over at the Shack. A job on 40 meters with a kilowatt input was built up by Ray Popkin. However the requirements for a club transmitter are much more stringent than for ordinary ham transmitters. It must be absolutely fool-proof

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### LAST YEAR'S ACTIVITIES

and need no fiddling because remote control is necessary. It ought to look passably decent for after all we are the biggest and oldest college radio club. It simply has to be reliable so that anyone who can press a button can operate it.

Last May at Open House the Society was quite active. The Ragchow was published in magazine form and about 800 copies were given away to visitors at the Shack. The issue commemorated the 26th anniversary of the Society. A copy has been posted on the bulletin board for your convenience, or you may obtain one from the secretary if you wish. Five portable five meter stations were operated by members of the Society around the campus, one in an air plane conducting a demonstration in co-operation with the Military Science department, one in a motor-boat in co-operation with the TECH, one in a car, one with a public address system in the Great Court, and one at the Schack. A public address amplifier was installed on the roof of the Shack and both the 5 and 20 meter fone conversations fed into it. A very favorable impression was made on most of the visitors.

During the Easter vacation, four members of the Society, Acker, Austin, Coile, and Rochrig, went out to the Springfield, Mass. airport with twenty members of the Aeronautical Engineering Society. The A. E. S. took two gliders and its tow car, and the Radio Society took two transceivers and a more powerful transmitter-receiver job permanently placed in Austin's car. One of the most enjoyable parts of the trip was the ride in the rumble seat thru 90 miles of snow and rain out to Springfield. The tests with transceivers in the gliders went off quite satisfactorily. Since the instructor on the ground could talk to the student pilot while he was in the air, the training of about ten fellows who had never flown before was aided considerably. Two way communication between glider and ground was also tested on some longer flights where the glider was towed to a height of 800 feet: The two societies hope to hurdle financial barriers this year and install radio equipment in the gliders.

Although the Society had quite a constructive year, we hope to raise enough money to get a good receiver and to do more experimenting on ultra-high frequency fone equipment this fall. Our goal of a high power transmitter on each of the important amateur bands is rapidly being realized with a 500 watt transmitter on 80, a kilowatt on 20, and a couple hundred watts on 40 rapidly materializing. We hope to install a high power 5 meter fone using a pair of 852's and a directional array this fall, also.

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## LAST YEARS ACTIVITIES

Please remember that this is a club station and belongs to all of us. The Station Manager is just one of us elected to see that anything we decide to build is built. Don't hesitate to voice your opinions on anything at any time. And remember if you want something done, the best way to get it done is to do it yourself. Just an old truism, but mighty applicable to a club station.

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## LICENSES

Do you remember the days when you were studying for your first operator's license exam? Did you decide - as most would-be's do - to go down and take the exam for your class A ticket as soon as your first year of operating was over? I did. But somehow, I never got around to it for two or three years. Mental inertia - pure and simple - is the only explanation I can muster now. How about all of us snapping out of the present state of lethargy. It's no trouble at all to get your Class A ticket. Any Saturday morning will do. The exam won't even take a couple of hours.

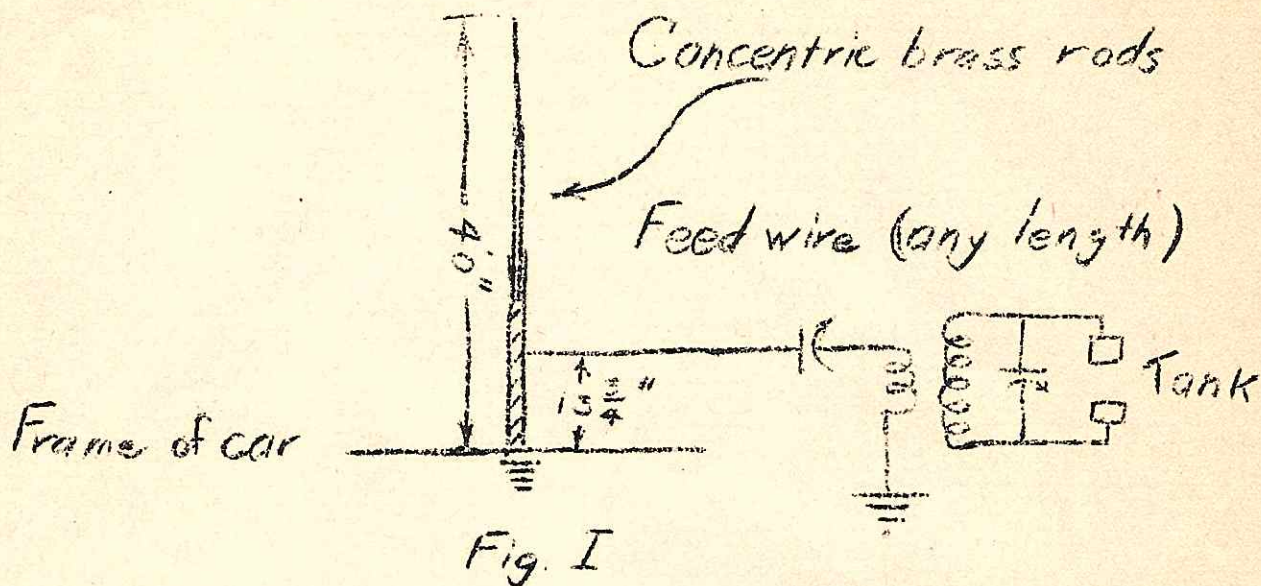
A good beginning was made last year. As soon as the 20 meter phone started to give fairly good performance three or four fellows went down to the F.C.C. office and took the exam. They certainly were glad they did, for the fone ragchews lived up to all possible expectations. As only fellows with Class A licenses will be allowed the unrestricted operation of the new 20 meter fone transmitter it will be mighty convenient for those of us who haven't Class A's to get them.

While we are at it, why not think about some commercial licenses? Bill Fingerle, our president, got a Radiotelephone First this summer, and Al Acker, our vice-president took the exam for a Second class Radiotelegraph and passed easily. Why not study a little and get yourself a Radiotelephone First and then try for a job in some local broadcast station next summer? Coile has a job promised him next summer as a relief op so that some of the regulars can take vacations in a small broadcast station down in Virginia. Several other members of the Society have commercial licenses. Bill Tuller, W2BPZ, and Louis La Forge, W9JPA, have Radiotelephone Firsts, and Frank Lewis, W9AOG, has a second class Radiotelegraph as well as John Austin, W1AHX. Tuller had a job promised him as soon as he could get a license, and studied for a week before he took the exam. If one of us can get it after a weeks study- how about it?



# AN EFFECTIVE 5 METER AUTOMOBILE ANTENNA

by John F. Austin WLAHX



The 5 meter antenna herein described has proved extremely efficient for various mobile stations such as boats, airplanes, and autos. Its dimensions may be checked from the article on, - Single Wire Matched Impedance Feed Antenna - , in the Radio Amateur's Handbook.

In fig. 1 the antenna is constructed from concentric brass rods (which may be purchased from most hardware stores) for portability, convenience, and adjustment to the proper length. The base should be grounded to the body of the car, and located within the car's center of symmetry, i.e. the radiator cap, top center of the windshield, roof, etc. The feeder should come away at right angles for at least  $\frac{1}{3}$  of the length of the antenna. It could also be conductively coupled to the tank circuit instead of inductively as shown. The midget series condenser of 2 or 3 plates is used to adjust for proper excitation and to insulate the high voltage of the tank circuit from ground in case conductive coupling is used. When properly adjusted the antenna will resonate sharply at the desired frequency. In fig. 1 the antenna should resonate at approximately 58000 kc.

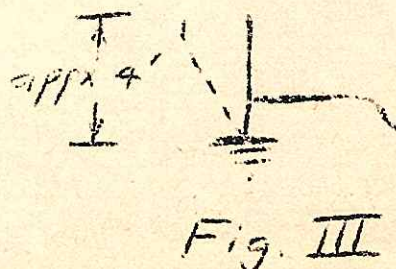
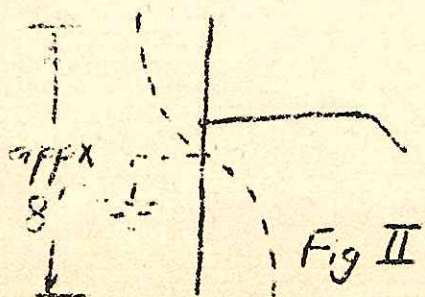




Fig. 2 shows a  $1/2$ -wave 5 meter antenna with single wire matched impedance feed. Its voltage curve shows the points of maximum voltage at either end and a node at the center, which may be grounded without affecting the antenna's operation. We may then do away with the lower half of the antenna and we have our old friend the  $1/4$  wave Marconi antenna with matched impedance feed Fig. 3, which may be recognized in Fig. 1.

### FIVE METER HUNT

Among the many and varied activities planned for this year is a five meter hidden transmitter hunt. It will be held during the latter part of November in conjunction with the Harvard Radio Society. Allen Monderer, W9VCX and Howard Lawrence, W2IUP, both of Tech and McDonald Nyhen, W1BND of Harvard have been named as joint chairmen of the committee.

For those of you who are in doubt as to the workings of such an event I shall give a few of the important points.-- A five meter transmitter is set in operation at some point unknown to the other members of the club. Generally the transmission consists of an ICW tone interrupted at frequent intervals with the station identification. The members then set out in cars equipped with some form of 5 meter receiving apparatus and attempt to locate the transmitter. Many different methods have been used in doing this-- dead reckoning, directional arrays and field strength meters are a few of those used. The unit finding the location of the transmitter and arriving there first wins the prize.

The comparative ease and rapidity with which some teams have found hidden transmitters has demonstrated that it is possible to locate bootleg stations. The methods used in a hunt can narrow the possible location of the bootlegger to a few houses and ringing a couple of doorbells will locate him.

The club has been fortunate in securing the loan of a portable 20 watt rig to use on the hunt, to be powered by storage batteries and a dynamotor.

While the Harvard club has guaranteed the entrance of at least 4 teams, we at Tech have not had one entry as yet. The following are known to have some type of five meter equipment: Snow W2BZM, Kierstead, Mrose W1JIA, White W1JIG, Dodge W1JIE, Lawrence W2IUP, Popkin W1EPH, Maida W2FEB, Brewer W1FEA, Phinizy W4VH, Roehrig W1ENE, Porter W1HPB, McLean W1EIL, and Fingerle W2BPS.

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If you wish to enter the hunt and have either suitable equipment, or can borrow some; or have a car let the Secretary or Committee Chairman know. Further information cannot be released until a later date. The Plans are being held up because of a lack of knowledge of the number of prospective entrants.

Allen Monderer

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It is only thru our ads that the Ragchew is made possible, consequently it is up to us to show them a return on their investment. We are doing our best to keep the cost of the Ragchew down, so that we can send out as many copies as possible, and it is impossible to do this without ads. Unless we show the companies who advertise that it is worth while, we may have to curtail the quantity if not the quality of the Ragchew. Our advertisers are the best and most up-to-date in town and want our business. We don't mean to start any campaign to - Say you saw it in the Ragchew - It identifies you and helps the Ragchew -, but it might help the Society if you happened to mention that you were from L. It:T. when you are in the local radio stores.

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### CODE CLASS

George Laurent, WLHSG, has been appointed Chairman of the Code Class Committee. There will be a class on Monday, Wednesday, and Friday, at 5 pm for a half hour. The class hours may be changed to suit the preference of those interested, so come to room 3-307 on any or all of those days next week, and see Laurent about the time. After the first two weeks, those in the code class will be permitted to come in and use the Teleplexes during their spare periods, if they care to. All members of the Society are reminded of the new receiver in the Shack waiting to be used. Try dropping in at the Super's office to get a key and spend a spare period listening in, working somebody, or even studying. The Shack is yours and might as well be used.

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## Naval Reserve Net

WLMX will soon be in the Naval Reserve Net. Fred Lamb, WLEMH, and Bob Alder, W6CLB, report. Lamb has brought over his RK 28 transmitter which he is rebuilding over at the Shack. He expects to have everything going within a couple of weeks with a kilowatt on 40 meters. As soon as the Society can beg, borrow or build some modulation equipment, he intends to put it down on 20 meter fone. All hams interested in learning more about the Naval Reserve are asked to get in touch with Fred Lamb, who would like to have several more hams here at school in the unit he's in.

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## A. A. R. S.

Bill Phinizy, W4VH has taken over the Army Amateur Net that Ray Popkin, WLEPH, and Sid Kodama, W2GAK, handled last year. Capt. Bicher would like to have another operator, and requests all amateurs who are interested to come to his office, room 3-307 and talk it over. The net works from nine to twelve on Sunday mornings.

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## QSL's

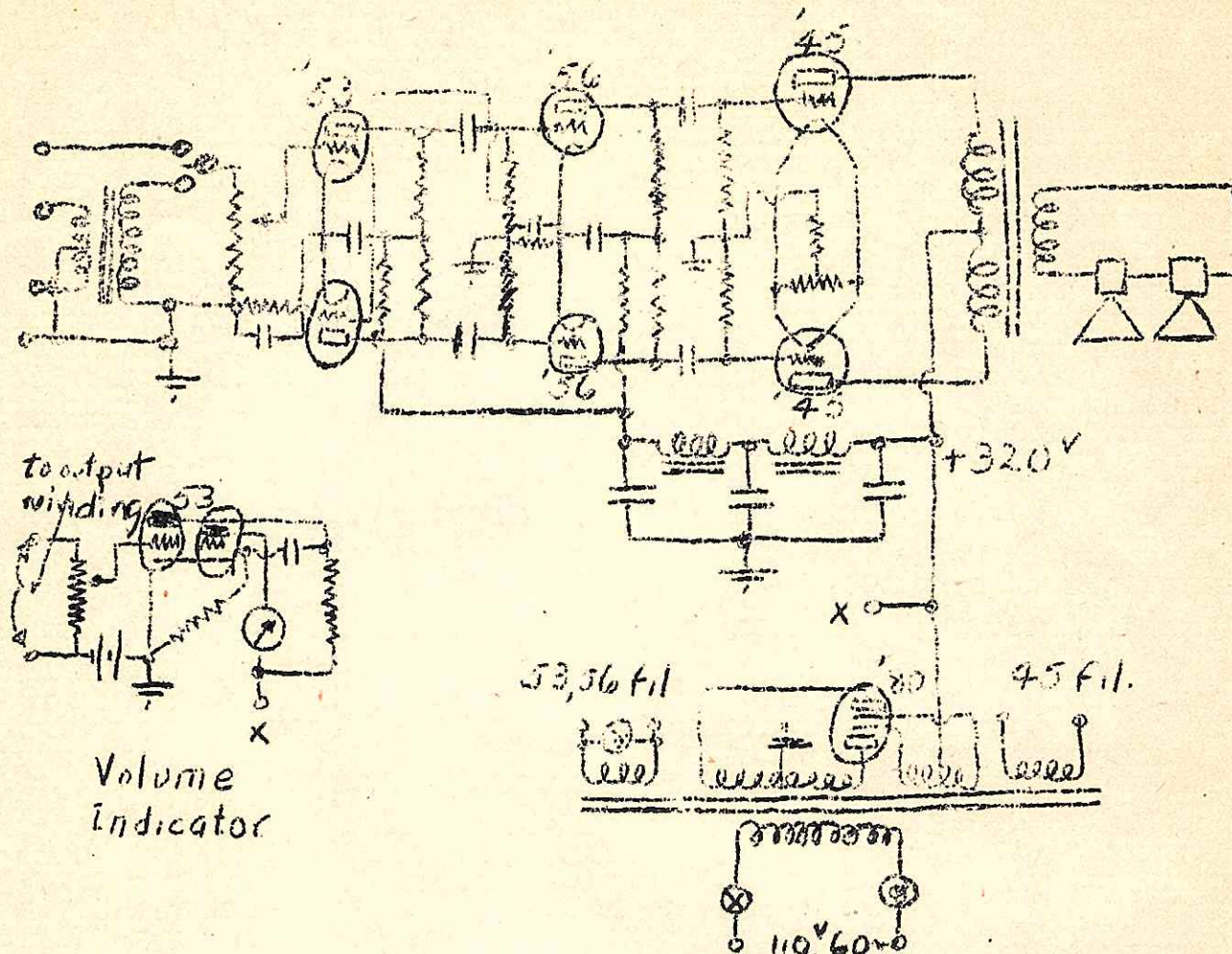
Don Waterman, W1IPQ, has been appointed QSL Manager of the Society. He will attend to the sending out of all cards and the displays of those we receive. At present he is cooking up a display of the numerous foreign cards WLMX has acquired. He would like to have the QSL of every ham in Tech on our bulletin board near 10-250, and requests everyone to either send him a card or drop one in any institute mailbox, addressed to Coile in the Dorms.

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## NEW EQUIPMENT AT WLMX

Most of you will probably have seen the new bug - a Mac Key - over at the Shack. The new single-signal xtal superhet will probably be there when you get this issue. Glenn Browning helped us out with our receiver problem by fixing up one of the Tobe-Browning ham supers, with xtal and air-tuned padding condensers.





The circuit given above is the high-fidelity amplifier which the Society proposes to use for public address work. The amplifier and power supply are constructed on individual rack-panel units. This scheme of construction makes for portability, low hum pickup and flexibility. The input is so arranged that either 200 ohm or high impedance input devices can be used. The tube line-up is: '53 phase inverter, '56's pp driving '45's class A. The power supply uses a single '80 and is equipped with fuse and pilot light.

The output is about four watts into a 10 ohm line. For use in situations where the speakers are remote from the amplifier, or when the amplifier is used in a transmitter as a line amplifier, a voltage indicator has been built into the set. This indicator reads about 2 volts at full output. For higher output, a pair of 2B6's may be used to replace the '45's with a minimum of circuit changes. As is, the measured frequency response is flat within 2 db. from 30 to 8000 c.p.s. (down 4 db. at 10,000 ). The values of the circuit constants are standard for the tubes used.



QSL's

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Frank Jackson, W3CAZ, was in a spot the other day. He had written to a friend in Philadelphia asking for a sked. The friend wrote back and said 3 pm Saturday would be just the time for him. Poor Frank was in a quandary. He hadn't expected a sked so soon, since he didn't have his transmitter up here with him. And to boot, he had so much work to do, he just couldn't see how he could build a transmitter during the two weekdays preceding the Saturday of the sked. After his last class on Saturday, which was over at 1:00 pm he dashed home, buying some parts on the way. From 1:30 to 2:45 he worked feverishly. Ha - the pride of achievement filled his soul as he sank back in an easy chair to gaze on his creative efforts - a noble 245 in a Hartley. It is unnecessary to tell the rest of this happy tale - the sked kept to the satisfaction of all concerned.

.....

→ HAMS ←

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H A M A D S

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2) Sylvania type '83.  
3) Type 210, metal plate. 75¢  
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W9PFV	Kornblith, L.	'38	Winnetka, Ill.	Boston
W1EMH	Lamb, F. H.	'38	Newton	Dorms
W9JPA	La Forge, L.	'37	Kansas City, Mo.	Dorms
W1HSG	Lorent, G.	'39	Philadelphia, Pa.	Dorms
W2IUP	Lawrence, H. C.	'38	Upper Montclair, N. J.	Dorms
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W9AOG	Lewis, F.	'37	Kansas City, Mo.	Dorms
W9LVF	Lukes, R. V.	G	Cicero, Ill.	Grad. House
W2EXN	Lynch, W. M.	'39	Maroneck, N. Y.	Brookline
W2FBH	Maida, F. X.	'37	Long Beach, N. J.	Dorms
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